

## Appendix A

## Documentation

## Section 1. Overview

This appendix documents data sources and procedures used to develop the estimates in the Combined State Energy Data System (CSEDS) that are presented in the “Statistical Tables” of this report. Information is provided for each of the four major energy sources: coal, natural gas, petroleum, and electricity. The last section describes adjustments for consumption of industrial process fuel and intermediate products and other uncoded energy sources.

**Price Estimation Methodologies**

Price data in the *State Energy Price and Expenditure Report* are expressed in dollars per million Btu. If the source data are in physical units, they are divided by the appropriate conversion factors to create the Btu prices. Estimated prices are used only when specific State-level prices are not available for a given energy source and sector. In some cases, prices for energy consumed in one sector in a State are assigned to another sector in the same State. Specific examples are: industrial steam coal prices are assigned to the commercial and transportation sectors’ steam coal use; industrial lubricants prices are assigned to transportation lubricants uses; and transportation motor gasoline prices are assigned to commercial and industrial use of motor gasoline.

In addition, there are a few cases where State-level prices could not be identified for any economic sector for a given energy source for some or all years. In these instances, a national-level price is used for all States for a given year. The procedures for estimating these national-level prices are presented in the body of the documentation under each energy source as appropriate. The cases where a national-level price is

assigned to all States in all years are: transportation use of aviation gasoline; industrial and transportation use of lubricants; and some components of other petroleum products used in the industrial sector.

Finally, within a given energy source and sector where price data are usually available, there are some cases of missing prices. Two general approaches are used to assign or estimate prices in cases where consumption occurs but no price is directly available from the data sources. The first approach is to assign an adjacent State price or the simple average of adjacent States’ prices. When this approach is not feasible, the consumption-weighted price from the Census division or region or the Petroleum Administration for Defense district or subdistrict in which the State is located is assigned.

Three State groupings used in the report—U.S. Census regions and divisions, Federal regions, and Petroleum Administration for Defense districts—are shown in Figures A1, A2, and A3, respectively, on the following pages. States are often designated by their two-letter postal code abbreviations shown in the map legends. Throughout the documentation, the term “State” includes the District of Columbia.

**Expenditures**

Energy consumption estimates in CSEDS used to calculate expenditures are published in the EIA *State Energy Data Report 1997, Consumption Estimates*, DOE/EIA-0214(95), September 1999. Full documentation of the data sources and the methods used to estimate energy consumption are described in the consumption report.

To calculate energy expenditures, CSEDS consumption is adjusted to remove quantities of process fuel and intermediate products used in the industrial and transportation sectors that are not purchased directly by end users. Use of hydroelectric, geothermal, wind, and solar energy sources are also removed from CSEDS expenditure calculations since there are no direct fuel costs for those energy sources. CSEDS consumption of wood in the residential and commercial sectors and wood and waste consumption in the industrial sector are adjusted to remove estimated quantities that were obtained at no cost. Energy expenditures, in million dollars, are calculated by multiplying CSEDS prices for each fuel in dollars per million Btu times the CSEDS adjusted consumption in billion Btu.

***End-Use Sector, State, and National Consumption-Weighted Average Prices***

Aggregated prices shown in this report are the consumption-weighted averages of the various energy sources included in the aggregation. The CSEDS calculation is performed by summing the expenditures for the energy sources and dividing by the sum of the corresponding consumption values. For example, the average price for residential petroleum is the sum of residential expenditures for distillate fuel oil, kerosene, and liquefied petroleum gas divided by the sum of residential consumption of those fuels.

**Primary Energy and Electricity.** Within each end-use sector, the sum of all fuels used directly as energy, i.e., coal, natural gas, petroleum

products, and wood and waste, is called primary energy. Electricity is considered a secondary energy source because it is generated from the primary energy sources consumed by electric utilities. Within each sector, the primary energy price is calculated by summing the expenditures for coal (the sum of coking coal and steam coal), natural gas, petroleum (the sum of all petroleum products used by the sector), and wood and waste and dividing by the sum of all the consumption for those fuels. The average price of all energy consumed by each sector is the sum of the expenditures for primary energy and electricity divided by the sum of the consumption of the primary energy sources and electricity.

**Electric Utility Sector.** Electric utilities comprise a fifth energy consuming sector, although they are not considered an end-use sector. The average price paid by electric utilities for primary energy sources is the sum of their expenditures for coal, natural gas, petroleum products, nuclear fuel, and wood and waste divided by the quantities consumed.

**Primary Energy, Total, and Total Energy.** The average price for the "Primary Energy, Total" shown in the first *SEPER* table for each State and the United States is the sum of the four end-use sectors' and the electric utility sector's expenditures for coal, natural gas, petroleum, and other fuels divided by the sum of the five sectors' consumption of those fuels. The distinction between this average price and the "Total Energy" average price shown in the same table is that this price includes all fossil and other fuels consumed, including those used to generate electricity. The "Total Energy" price is the average price of fuels consumed directly as energy by the four end-use sectors and the much higher price of the four sectors' electricity consumption.

Figure A1. U.S. Census Regions and Divisions



**Region 1**  
**Northeast**

**Division 1**  
**(New England)**  
Connecticut (CT)  
Maine (ME)  
Massachusetts (MA)  
New Hampshire (NH)  
Rhode Island (RI)  
Vermont (VT)

**Division 2**  
**(Middle Atlantic)**  
New Jersey (NJ)  
New York (NY)  
Pennsylvania (PA)

**Region 2 Midwest**

**Division 3**  
**(East North Central)**  
Illinois (IL)  
Indiana (IN)  
Michigan (MI)  
Ohio (OH)  
Wisconsin (WI)

**Division 4**  
**(West North Central)**  
Iowa (IA)  
Kansas (KS)  
Minnesota (MN)  
Missouri (MO)  
Nebraska (NE)  
North Dakota (ND)  
South Dakota (SD)

**Region 3 South**

**Division 5**  
**(South Atlantic)**  
Delaware (DE)  
District of Columbia (DC)  
Florida (FL)  
Georgia (GA)  
Maryland (MD)  
North Carolina (NC)  
South Carolina (SC)  
Virginia (VA)  
West Virginia (WV)

**Division 6**  
**(East South Central)**  
Alabama (AL)  
Kentucky (KY)  
Mississippi (MS)  
Tennessee (TN)

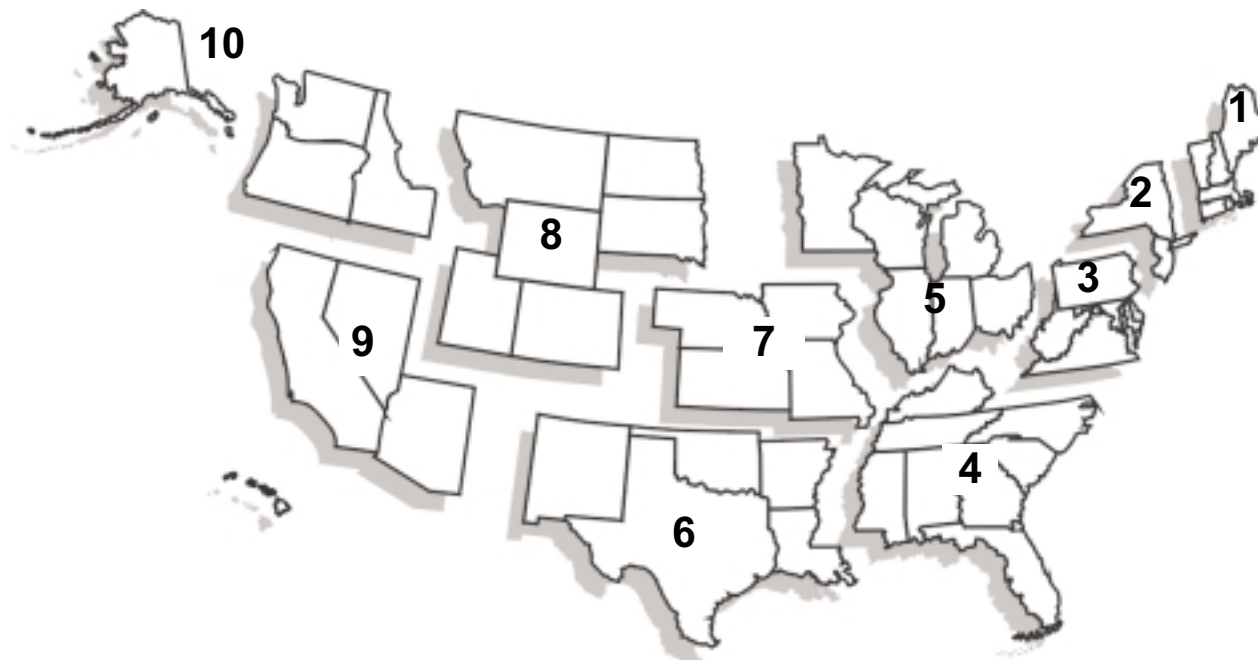
**Division 7**  
**(West South Central)**  
Arkansas (AR)  
Louisiana (LA)  
Oklahoma (OK)  
Texas (TX)

**Region 4 West**

**Division 8**  
**(Mountain)**  
Arizona (AZ)  
Colorado (CO)  
Idaho (ID)  
Montana (MT)  
Nevada (NV)  
New Mexico (NM)  
Utah (UT)  
Wyoming (WY)

**Division 9**  
**(Pacific)**  
Alaska (AK)  
California (CA)  
Hawaii (HI)  
Oregon (OR)  
Washington (WA)

Figure A2. Federal Regions

**Region 1****New England**

Connecticut (CT)  
 Maine (ME)  
 Massachusetts (MA)  
 New Hampshire (NH)  
 Rhode Island (RI)  
 Vermont (VT)

**Region 2****New York/New Jersey**

New Jersey (NJ)  
 New York (NY)

**Region 3****Mid Atlantic**

Delaware (DE)  
 District of Columbia (DC)  
 Maryland (MD)  
 Pennsylvania (PA)  
 Virginia (VA)  
 West Virginia (WV)

**Region 4****South Atlantic**

Alabama (AL)  
 Florida (FL)  
 Georgia (GA)  
 Kentucky (KY)  
 Mississippi (MS)  
 North Carolina (NC)  
 South Carolina (SC)  
 Tennessee (TN)

**Region 5****Midwest**

Illinois (IL)  
 Indiana (IN)  
 Michigan (MI)  
 Minnesota (MN)  
 Ohio (OH)  
 Wisconsin (WI)

**Region 6****Southwest**

Arkansas (AR)  
 Louisiana (LA)  
 New Mexico (NM)  
 Oklahoma (OK)  
 Texas (TX)

**Region 7****Central**

Iowa (IA)  
 Kansas (KS)  
 Missouri (MO)  
 Nebraska (NE)

**Region 8****North Central**

Colorado (CO)  
 Montana (MT)  
 North Dakota (ND)  
 South Dakota (SD)  
 Utah (UT)  
 Wyoming (WY)

**Region 9****West**

Arizona (AZ)  
 California (CA)  
 Hawaii (HI)  
 Nevada (NV)

**Region 10****Northwest**

Alaska (AK)  
 Idaho (ID)  
 Oregon (OR)  
 Washington (WA)

Figure A3. Petroleum Administration for Defense Districts

**District IA**

Connecticut (CT)  
 Maine (ME)  
 Massachusetts (MA)  
 New Hampshire (NH)  
 Rhode Island (RI)  
 Vermont (VT)

**District IB**

Delaware (DE)  
 District of Columbia (DC)  
 Maryland (MD)  
 New Jersey (NJ)  
 New York (NY)  
 Pennsylvania (PA)

**District IC**

Florida (FL)  
 Georgia (GA)  
 North Carolina (NC)  
 South Carolina (SC)  
 Virginia (VA)  
 West Virginia (WV)

**District II**

Illinois (IL)  
 Indiana (IN)  
 Iowa (IA)  
 Kansas (KS)  
 Kentucky (KY)  
 Michigan (MI)  
 Minnesota (MN)  
 Missouri (MO)  
 Nebraska (NE)  
 North Dakota (ND)  
 Ohio (OH)  
 Oklahoma (OK)  
 South Dakota (SD)  
 Tennessee (TN)  
 Wisconsin (WI)

**District III**

Alabama (AL)  
 Arkansas (AR)  
 Louisiana (LA)  
 Mississippi (MS)  
 New Mexico (NM)  
 Texas (TX)

**District IV**

Colorado (CO)  
 Idaho (ID)  
 Montana (MT)  
 Utah (UT)  
 Wyoming (WY)

**District V**

Alaska (AK)  
 Arizona (AZ)  
 California (CA)  
 Hawaii (HI)  
 Nevada (NV)  
 Oregon (OR)  
 Washington (WA)

